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On the Doctrine
of
Critical Days,
in
Fever.

By John Bellinger.

"Tis plausible in theory, & true in experience."

Robert Jackson.

Vol. 3. No. 1. 1792

Concise & disconnected as these few observations
may at first appear, still it is hoped that they are
of such a nature, & are so arranged, that, by a
well informed mind, they may readily be re-
ferred to other & more extensive series of Physi-
ological & Pathological facts, which may be
adduced in their support.

Before proceeding to the consideration of the subject more immediately before me, I propose to make a few remarks upon the nature of critical terminations in general.

Acting upon a firm persuasion of the truth of the Humoral pathology, the Ancients naturally attributed the appearance of "critical discharges" to the evacuation of "morbific matter." So far their Theory was ingenious and plausible, & had their practise been rightly deduced from it, it might have been harmless if not beneficial. But in conceiving that those diseases in which these evacuations usually occurred were alone in their immediate tendency; and that nature required the assistance of stimulant remedies to complete the operations by which they supposed the cure was effected; they drew their conclusions from false premises; not carefully investigating the

* See Burns on Inflammation. Bluttlebuck on Force.
Cooper's & Travell's Surgical pags. Chap. on Siles, and
particularly a letter from Dr. Fane therein inserted.
Repear on Absorption. &c. &c. &c. &c.

effects of the medicines they administered. An experiment attempted a new system of Therapeutics, & experience justified the innovation, the Pathology, upon which the old method of cure was founded, came to be ridiculed and abandoned: and as in other revolutions the change was intended to be neither partial nor temporary.

It has been required for modern ingenuity to disclose the principle upon which these effects depend, and so clearly to reveal the mystery of nature's operations, that by establishing certain actions in the system, we bring diseases at once to a favourable crisis, which might ^{remain} be tedious in duration, destroying in their consequences, or fatal in their termination.* Diphyl, for instance is no longer considered as so entirely dependent upon inequality of the functions of certain systems

of respiration as to be cured by a class of medicines calculated to act on these alone. &c. whatever establishes an action similar to the natural one, in other words, brings back the system to a healthy state, purifies, or removes the effusion, which is its most striking characteristic. Thus it has failed, when the whole class of Diuretics has failed, to remedies apparently foreign in their application, to the nature of the case.

Disavowing therefore this method of the humoral pathologists, we look upon depositions in the urine, sweat, diarrhoea &c not as testimonies of the expulsion of morbid matter, but as evidences of the commencement of actions, which had been suspended during the violence of disease.

The desiderata then, in our Practice,

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are, to ascertain the nature of the changed action; and the means best calculated to induce the natural one.

The nature of acute diseases is generally well understood, their Pathology well defined and their treatment obvious: Still we have often to lament, not our ignorance of Therapeutics, but the ineffacy of our *Materia Medica*. Notwithstanding experience warrants our aspinning to certain of them, the power of exciting specific actions in the human system, they have often obstacles to remove before their effects can be manifested, and should these obstructions exceed the limits of their power, they fail in fulfilling our intentions. Others, after having a few times tried their influence in our favour, appear to lose the power they formerly possessed over some individual constitutions, & become inert upon exhibition; or again, what is more perplexing,

* All modern works are full of these complaints, but for a brief & feeling exposition of them, see Johnson on Tropical Climates, particularly the chapter on Presently.

† See the Aphorisms and Books on Prognostics, of Hippocrates, for the substance of the doctrine; and his Book on Epidemics for the facts on which it is founded.

‡ Galen, Van Swieten, &c

¶ See Rees Cyclopaedia, article "Critical Days."

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a kind of retrograde action; aggravating rather than alleviating the distresses of our patients.*

The Subject I have chosen comes with it every circumstance of antiquity, plausibility & high authority to recommend it to our attention. yet must we not from the consideration of these alone, without carefully examining its other pretensions to our belief, subscribe to the doctrine; for tho' the "Father of Medicine" was its parent, though it was fostered by some the most eminent of his successors & is still supported with all imaginable learning & ingenuity; in the opposition we behold the names of Herophilus, Hippocrates, Celsus, omitting a host of moderns. P If it has been advanced with confidence, it has been opposed with resolution; its supposed inconsistency and absurd origin have been ridiculed; the doctrine of the humoral pathology, of which

it may well be considered an appendage, has been
overthrown; and the facts by which it is ~~supposed~~
said to be supported have been controverted.
It becomes us therefore impudently to investigate
its claims for our attention, & impartially to ex-
amine ~~the~~ ~~the~~ the arguments of the dis-
putants, & we coincide with either party.
As however this essay is intended, not for the
amusement of the antiquarian, but rather for
the inspection of professors of the Science, to
state a few of the principal objections that have
been urged against it, and a brief account
of improvements suggested, is all I propose.
It may be thought requisite, as being intimately
connected with my subject, that I should en-
deavour to lay down some precise idea of
few. I shall, however, refrain from entering
upon this "debatable ground;" for it is perhaps
less difficult to define the exact meaning

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* Vide Coplanas Appendix to Richardson's
Physiology, &c. &c., &c.

+ Johnson on "Tropical Diseases."

† Jackson's "Sketch of Febrile Diseases."

¶ Parry's Pathology & Therapeutics.

* of "life" than to give a just definition of yours. A strict analysis and synthesis of the usual symptoms leave us either the bare word, stripped of all signification, or with no small portion of the Nosological table following in its train.

The pathognomies now commonly insisted on, are the suppuration of the secretions & excretions, & the inequilibrium of the circulation. Nor can these be waived by Pathologists; for by adopting the former, we must necessarily exclude from our definition some forms of fever described by Jackson; & not if we seize with foolish hope upon the latter we pull the whole of Parry's Pathology about our ears.

The first affection to the decline of Culical Days which I shall notice, is one of ancient date, and forming one upon which consider-

able steps was laid. The following quotation I consider sufficient to explain & remove it. "The inconsistency of the doctrine has been objected to it. The inconsistency observed by Celsus is this; Hippocrates considers the fourth day of each septenary as critical: hence the fourth and the eleventh (taking the eighth as the first of the second septenary) are critical.

But he assimilates the seventeenth with these, as a fourth; whereas the seventeenth is the third only, of the third septenary; for the eleventh is the fourth from the seventh but the seventeenth is only the third from the fourteenth: this makes the twentieth the last of the third septenary, and not the twenty-first.

Various conjectures are entertained respecting the origin of these periodical movements in fever. Some attributing them to

* Rees' Cyclopaedia, loc. cit.

† Cullen's "First Lines" p. 118 & 122. inclusive.

‡ Goods' "Study of Medicine" vol. 2. p. 86.

the harmony of numbers, according to the Pythagorean Philosophy, & Celsus and others have conceived that Hippocrates was swayed by this absurd doctrine. But Van Swieten states the irregularity just stated, as a proof that Hippocrates deduced his numbers from a faithful observation of diseases."* Cullen who has dedicated his experience on this subject to coincide with that of Hippocrates, has given a simple & beautiful solution of this supposed inconsistency; attributing it to a change in the fever from a quotidian, successively to a tertian & quartan type; and Dr. Fodge who scarcely does justice to Cullen upon other points, unites with him upon the present, and justly complements him upon his ingenious examination, and explanation of the Greek distribution of critical days."†

It has been urged that the theory of modern

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practice, by disturbing the course of the disease, prevents those appearances from being developed, which under the treatment pursued by Hippocrates, were usually manifested. No one, after studying the "Sketch of Febrile Diseases," aside notwithstanding the vigorous & efficacious treatment therein recommended and pursued, still finds the amiable author a champion of this theory, will look further for a refutation.

Considering the state of medical knowledge when the doctrine of Cisis was promulgated, we must confess that the "humoral pathology" highly ingenious in itself received no small support from the appearances exhibited during the times that crises were supposed to occur. The violent agitation of the patient & aggravation of the symptoms, subsiding wholly or in part, upon the appearance of certain discharges, which, (when the patient was not too much ex-

* Are not Parry's Pathology, and the absorption of
foreign substances into the circulation, sufficient
proof of this action? Vide also Bichat's Anatomy

hausted by the previous continued violence or successive exacerbations of the disease) were followed by more or less rapid recovery, were circumstances that afforded ample space for the exercise of genius, and accordingly the ancients improved it to the extent of their opportunities. But when in process of time this doctrine came to be exploded, every subject in any manner connected with its principles, underwent the invectives that were heaped upon the general hypothesis. We are not surprised then to see the one before us particularly distinguished by the endeavours to establish its downfall: we know however that many points of that doctrine that once sat in obscurity, are again rising above the horizon of medical science.*

It would be impudent here to enter into any discussion, touching the causes of

general, for an admission, that although disease be not seated in the fluids, yet these are often the vehicles of its causes.

* Vide, Mead, Darwin, Balfour, Linda and Jackson on *Lunar influence*.

† "He may be regarded as laying down the following as the critical days in continued fever: the 5th, 6th, 8th, 10th, 14th, 17th, 26th. In other parts of his work he regards also the 4th and 7th and even the 21st as critical days; so that in the first week, every day, after the disease has fully established itself, evinces a disposition to a vicious change; in the second week every other day; and in the third week every

fourth day of Medicinae vol 2^o p. 58.

what are considered critical terminations; all that we are enabled to know at present, since it is granted that they do exist, is whether they take place at stated periods.*

If we receive the statements of all who have pretended to make observations on the termination of fever, we must admit almost every day from the third to the twenty-first, as critical. Here we are exposed by an affection of no trifling importance. Hippocrates limited the termination of fever to ~~not~~ particular days; and unless his observations are confirmed, the theory must be abandoned. It becomes the supporters of the doctrine here far to furnish us with some clue, whereby we may extricate ourselves from this labyrinth of perplexities.

The primary object to be considered in calculating the duration of fever, is the

rule by which the time is to be regulated. The periodical evolution of twenty four hours (numbering from the accession of the fever) was the one universally adopted, so far as I have been able to discover until the publication of Sachsen's work on fever. Foddy, however proposed a different one, in as much as he wished to limit the ~~duration~~ accession of all cases of continued fever to one particular hour of the twenty four. Observing that this form of fever usually commenced its attack about 5 or 6 o'clock P.M. he proposed that we should consider it as always pursuing this course. He thereupon made a scale as it were of the twenty four hours, commencing at 6 o'clock P.M. and ending at the same hour on the following day. This he divided equally at the hour 6 A.M. Now all fevers supervening between 6 P.M. and 6 A.M. were

the country is in a state of chaos & no
order and hardly any work done
and (very) little money to be had
and as you know the
country is in a
state of great
confusion
*** "Fording the Fever."** - This is a
miserable experience. It is hard to imagine
how one can be made amidst such
a tumultuous and chaotic state and
the darkness. There is no light
whatever, in fact there is not much
light except in the distance there are
now a few houses of Germans
communities scattered about and you
cannot tell the difference between the houses
and the trees. It is very
dark the trees there is no moon
and the stars are few and the darkness
is great and there is no light whatever

to be regarded as commencing their attack, at 6 Pitt, which stands at the head of the scale; and their duration calculated accordingly. But if a few appeared between 6 A. M. and 6 Pitt, its accession was fixed at 6 Pitt, which stands at the foot, and its duration numbered from that point.* Ingenious as this may appear, and supported as it is by most cases of continued fever, it is nevertheless too arbitrarily to be universally applied; and unless we have one that may be adapted to every emergency the objection will exist in full force, for as we will perceive in the sequel, it has its origin in this very deficiency of the common method of calculation. Thus the contumelists of the opposite party, no longer contented ~~themselves~~ with ridiculing the circumstances supposed by them to give origin to the subject of debate, deny the facts

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which have hitherto been considered as its basis, and appeal at once to the observation and candour of mankind, for a decision in their favour. From the very nature of this objection, it is evident that the theory would soon be rejected by scientific men, as owing its existence to accident. Ours would thus occur as well on even as odd days: it would be waste of time, attended with disappointment to attempt to observe and calculate their appearance. But in the midst of this anarchy even as the Gaul has thrown his sword into the scale, behold, a Camillus marching to the rescue of the Capitol!

I will explain in as concise a manner as possible, the circumstances which suggested to the ingenious and comprehensive mind of Jackson, the improvements he has made & the facts he has collected for their support.

He observed that the exacerbation or recurrence of fever frequently anticipated or postponed the time of its usual appearance by a longer or shorter period: and that frequently in the course of the disease, there supervened a fever of the same or of a different type. Considering as these circumstances must primarily have been, they finally led him to adopt a new method in calculating the duration of fever. For by anticipating or postponing the time of its usual appearance, not only the hour but the day on which an exacerbation or recurrence should appear, would be changed; and the time of crisis would be on an even day, reckoning according to the civil day.

Again, suppose a fever of the same or of a different type to supervene upon one already existing, the crisis of the one would not be critical of the duration of the other. Conse-

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quently if we reckoned from the commencement of the first alone, we should frequently find one of them to terminate on an even day, independent of the irregularity occasioned by anticipation or postponement of the paroxysm. He observed also that if relapses were considered as continuations of the original fever, crises would sometimes happen on even days. Accordingly, he calculated the duration of fever from its commencement; regulating the length of the day, not by twenty four hours, but by the time included between the accession of each paroxysm, and the succeeding one. Intermission fevers he calculated separately according to the same rule: and relapses he dated from the time of their occurrence. His practice shows these improvements to be founded on experience. In 60 cases that

terminated favourably, ten terminated on the third, ten on the fifth, twenty on the seventh, ten on the ninth, five on the eleventh, three on the thirteenth, and two on the seventeenth. Of nine which terminated fatally, one terminated on the sixth one on the seventh, six on the eighth, and one on the tenth."

The great proportion of fatal terminations on even days attracted his attention, and he found that in referring a crisis to the hours of death he was mistaken. That in reality the crisis took place as usual on the odd day, but that the patient frequently lingered on to the even. Yet death sometimes happened on the even days from another cause. The decline of the paroxysm which in many cases was hardly perceptible in others was plain. The disease terminated; but another recurring, after a short inter-

** Jackson on Fire**

and the following lines were written in
the same or an earlier time in
the same or a similar vein. They tell us
of the early days of the State, and
of the contributions of the people to
the cause of freedom and the
success of the revolution. They
also show the early days of the State
as a period of great trial and
sacrifice. The following lines
are from the same author and
date as the preceding, and
show the same spirit of
devotion to the cause of
independence. The author
was a man of great
character and a
true patriot.

val, speedily put a period to existence." In such cases the patient dies in the height of the paroxysm carried off by convulsions, apoplexy, or other accident." * The anticipation or postponement of paroxysms, superposition of other fevers, relapses, & varying the time of crisis to the hour of death, have no doubt been the causes of the confusion apparent in the termination of fever when calculated according to the common method.

We may therefore consider these improvements as giving stability to the doctrine, as establishing a new era in its Chronology, as producing a grand clarionet in its existence.

